Data Storage

Representing Sound

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Representing Sounds

Sampling Amplitude

- ✓ Sample the amplitude of sound at regular intervals and records the values
- ✓ 8000 samples per second for long distance telephone communication

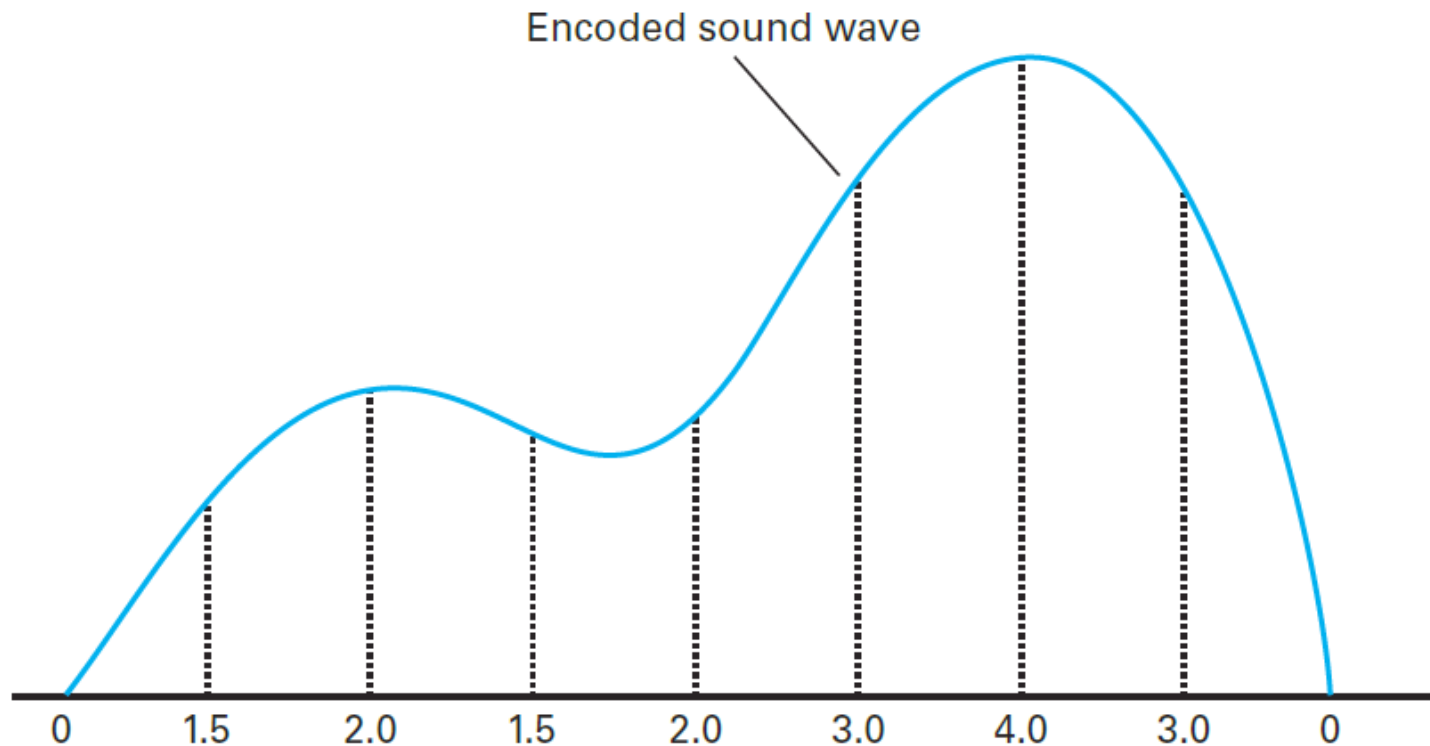Dr. M. Tanvir Afzal

How communication happens

Sampling
Amplitude

- ✓ At One end, it stores amplitude numeric values for each eight-thousand of a second

- ✓ Transmitted over the network

- ✓ Received on other end and sound is produced using amplitude.

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Sampling Amplitude

Encoded sound wave

| 0 | 1.5 | 2.0 | 1.5 | 2.0 | 3.0 | 4.0 | 3.0 | 0 |

Amplitudes

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Sample Intervals

Sampling Amplitude

- ✓ 8000 is not enough for high fidelity music recordings
- ✓ 44, 100 samples per second are recorded in todays CDs.
- ✓ Data from each sample is recorded in 16 bits (32 bits for Stereo)
- ✓ 32*44100 = million bits/sec

Alternative Method

MIDI

- ✓ Musical Instrument Digital Interface
- ✓ Used in music synthesizers found in electronic keyboards
- ✓ Encode directions for producing music rather than storing music itself.
- ✓ 2 seconds sound can be stored in 3 bytes rather than 2 million bits

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Alternative Method

MIDI

- ✓ Encoding the sheet music read by performer rather than the performance itself
- ✓ MIDI recordings could be significantly different when performed on different synthesizer.

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Summary

Representing Sound

- ✓ Sampling Amplitude
- ✓ MIDI

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